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USATHAMA

U.S. Army Toxic and Hazardous Materials Agency

Enhanced Preliminary Assessment Report:

Finleyville Army Housing Units Finleyville, Pennsylvania

October 1989

prepared for

Commander
U.S. Army Toxic and Hazardous Materials Agency
Aberdeen Proving Ground, Maryland 21010-5401

prepared by

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Argonne National Laboratory has conducted an enhanced preliminary assessment of the Army housing property located in Finleyville, PA. The objectives of this assessment include identifying and characterizing all environmentally significant operations, identifying areas of environmental contamination that may require immediate remedial actions, identifying other actions which may be necessary to resolve all identified environmental problems, and identifying other environmental concerns that may present impediments to the expeditious sale of this property.

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SUMMARY

The Finleyville housing area located near the city of Finleyville, Pa., does not present an imminent or substantial threat to human health or the environment. There is no evidence to suggest that hazardous or toxic constituents have ever been released from this property. There are no known environmental impacts from this property and during site investigation none were identified.

Although these housing units were originally developed in support of a Nike missile battery, all available documentation and circumstantial evidence suggest that the housing property was independent of the battery's operational activities. No Nike-related wastes were delivered to this property for management of disposal. However, because this property was once connected by sanitary sewer to the integrated fire control (IFC) area, the possibility of missile-related contaminants migrating along the buried sewer line that was abandoned in place needs to be further investigated.

There is no documentation of asbestos-containing materials being used in the units except for floor tiles that may contain asbestos. The floor tiles are all in good condition, however. Visual inspections of the housing units' interiors revealed no insulation whatsoever on the water pipes.

It is not known whether the two pole-mounted electrical transformers that service the housing site have been tested for the presence of polychlorinated biphenyls (PCBs), however, no evidence of spills or leaks in the vicinity of the pole was found during the site investigation. The transformers are the property of the electric utility company.

Based on the review of both historical and current practices at the property, the Finleyville housing area property poses no threat to human health or the environment.

The following action is recommended prior to release of this property:

- Locate the abandoned sanitary sewer line that once connected these housing units to the IFC area of the Finleyville Nike battery and verify that it has been properly abandoned; sample backfill materials around this sewer line to confirm the absence of Nike missile-related contaminants.

This recommendation assumes that this property will most likely continue to be used for residential housing.

1 INTRODUCTION

In October 1988, Congress passed the Defense Authorization Amendments and Base Closure and Realignment Act, Public Law 100-526. This legislation provided the framework for making decisions about military base closures and realignments. The overall objective of the legislation is to close and realign bases so as to maximize savings without impairing the Army's overall military mission. In December 1988, the Defense Secretary's ad hoc Commission on Base Realignment and Closure issued its final report nominating candidate installations. The Commission's recommendations, subsequently approved by Congress, affect 111 Army installations, of which 81 are to be closed. Among the affected installations are 53 military housing areas, including the Finleyville housing area addressed in this preliminary assessment.[1]

Legislative directives require that all base closures and realignments be performed in accordance with applicable provisions of the National Environmental Policy Act (NEPA). As a result, NEPA documentation is being prepared for all properties scheduled to be closed or realigned. The newly formed Base Closure Division of the U.S. Army Toxic and Hazardous Materials Agency is responsible for supervising the preliminary assessment effort for all affected properties. These USATHAMA assessments will subsequently be incorporated into the NEPA documentation being prepared for the properties.

This document is a report of the enhanced preliminary assessment (PA) conducted by Argonne National Laboratory (ANL) at the Army stand-alone housing area in Finleyville, Pa.

1.1 AUTHORITY FOR THE PA

The USATHAMA has engaged ANL to support the Base Closure Program and assess the environmental quality of the installations proposed for closure or realignment. Preliminary assessments are being conducted under the authority of the Defense Department's Installation Restoration Program (IRP); the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Public Law 91-510, also known as Superfund; the Superfund Amendments and Reauthorization Act of 1986, Public Law 99-499; and the Defense Authorization Amendments and Base Closure and Realignment Act of 1988, Public Law 100-526.

In conducting preliminary assessments, ANL has followed the methodologies and procedures outlined in Phase I of the IRP. Consequently, this PA addresses all documented or suspected incidents of actual or potential release of hazardous or toxic constituents to the environment.

In addition, this PA is "enhanced" to cover topics not normally addressed in a Phase I preliminary assessment. Specifically, this assessment considers and evaluates the following topical areas and issues:

- Status with respect to regulatory compliance,
- Asbestos,
- Polychlorinated biphenyls (PCBs),
- Radon hazards (to be assessed and reported on independently),
- Underground storage tanks,
- Current or potential restraints on facility utilization,
- Environmental issues requiring resolution,
- Health-risk perspectives associated with continued residential land use, and
- Other environmental concerns that might present impediments to the expeditious "excessing," or transfer and/or release, of federally owned property.

1.2 OBJECTIVES

This enhanced PA is based on existing information from Army housing records of initial property acquisition, initial construction, and major renovations and remodeling performed by local contractors or by the Army Corps of Engineers. The PA effort does not include the generation of new data. The objectives of the PA include:

- Identifying and characterizing all environmentally significant operations (ESOs),
- Identifying property areas or ESOs that may require a site investigation,
- Identifying ESOs or areas of environmental contamination that may require immediate remedial action,
- Identifying other actions that may be necessary to address and resolve all identified environmental problems, and
- Identifying other environmental concerns that may present impediments to the expeditious transfer of this property.

1.3 PROCEDURES

The PA began with a review of Army Housing records located at the Charles E. Kelly Support Facility, DEH Office Building No. S-630052, Pittsburgh, Pa., during the week of July 17, 1989. A site visit to the Finleyville housing area was conducted on July 18, to obtain additional information through direct observation and interviews with personnel familiar with the property and its operations and history. Photographs were taken of the housing units and surrounding properties as a means of documenting the condition of the housing units and immediate land uses. Site photographs are appended.

All available information was evaluated with respect to actual or potential releases to air, soil, and surface and ground waters.

Attempts to gain access to the housing units through involvement of the senior occupant were unsuccessful. Therefore, the interiors of the units could not be inspected during the site visit. However, ANL investigators revisited the property on September 12, 1989, at which time the interiors of all of the units were inspected.

2 PROPERTY CHARACTERIZATION

2.1 GENERAL PROPERTY INFORMATION

The Finleyville housing area is located in Washington County, approximately 1.5 miles northeast of the city of Finleyville, Pa., and 7 miles south of Pittsburgh.

The housing units were developed in 1957. No additional major construction has taken place on the property since that time. The Charles E. Kelly Support Facility, DEH, located in Oakdale, Pa. is responsible for any major renovations, maintenance, or upgrading at the facility.

Figures 1 and 2 show the general location of the facility.

2.2 DESCRIPTION OF FACILITY

Figure 3 presents the site plan of the housing property.

Housing Units

The site is a 20.23-acre parcel of land known as the Finleyville housing area and consists of 12 units that are occupied by military personnel.[2]

The units were constructed by the Army in 1957 and have been supplied with water from the city of Finleyville since that time. Sanitary sewage treatment has also been provided by the municipal treatment facility of the city of Finleyville since 1978. All units are built on concrete and masonry block foundations with asphalt floor tile overlaying the foundation. Original outside construction was of wood frame covered with vertical wood siding that was later covered with vinyl siding (date unknown). The roofing is of the built-up gravel type of construction (tar and pea gravel). Each unit has an exterior storage building, two garbage receptacles (no longer in use), and terrace paving.[3]

The housing site is composed of one three-bedroom unit, with an area of 1,307 square feet; two two-bedroom units, each with 1,121 square feet; three two-bedroom units, each with 1,013 square feet; and six three-bedroom units, each with 1,117 square feet.[4]

All units have separate natural gas-fired forced-air heating facilities that are adequate for the climatic conditions for the area. A play area is located inside the housing site's property boundary. This area is approximately 5,940 square feet and is equipped with playground equipment such as slides, merry-go-rounds, jungle gyms, and swings. A bus-passenger waiting shelter is also located on the property.

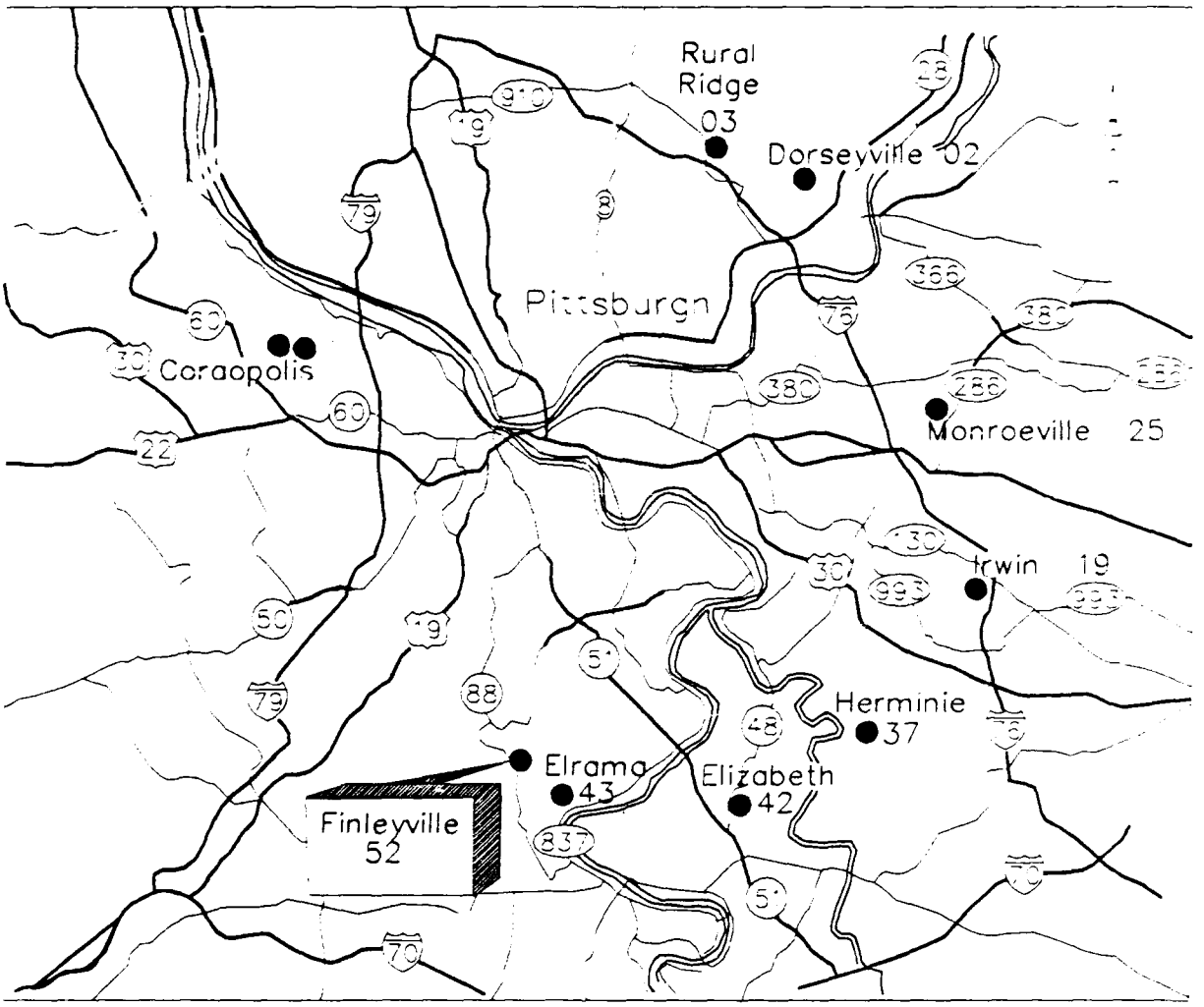

FIGURE 1 Location Map of Pennsylvania Army Housing Facilities

Utilities

Electricity for the Finleyville housing area is furnished by the West Pennsylvania Power Company, which also owns the two pole-mounted transformers located on the property. Water is furnished by the Western Pennsylvania Water Company, Pittsburgh Suburban District. Natural gas is furnished by the Equitable Gas Company,[5] and refuse (solid waste) is collected by Edmond's Trucking Company, a private contractor.[6]

Sewage

Sanitary sewage from the Finleyville housing area is treated by the Peter's Creek Sanitary Authority.[5] Originally, sewage from the housing units was delivered by sewer to the nearby IFC area for treatment in the facility located on that property. This sewer line was abandoned in 1978, and the housing units were connected to the city of Finleyville's municipal sewer system. No documentation could be located that provides

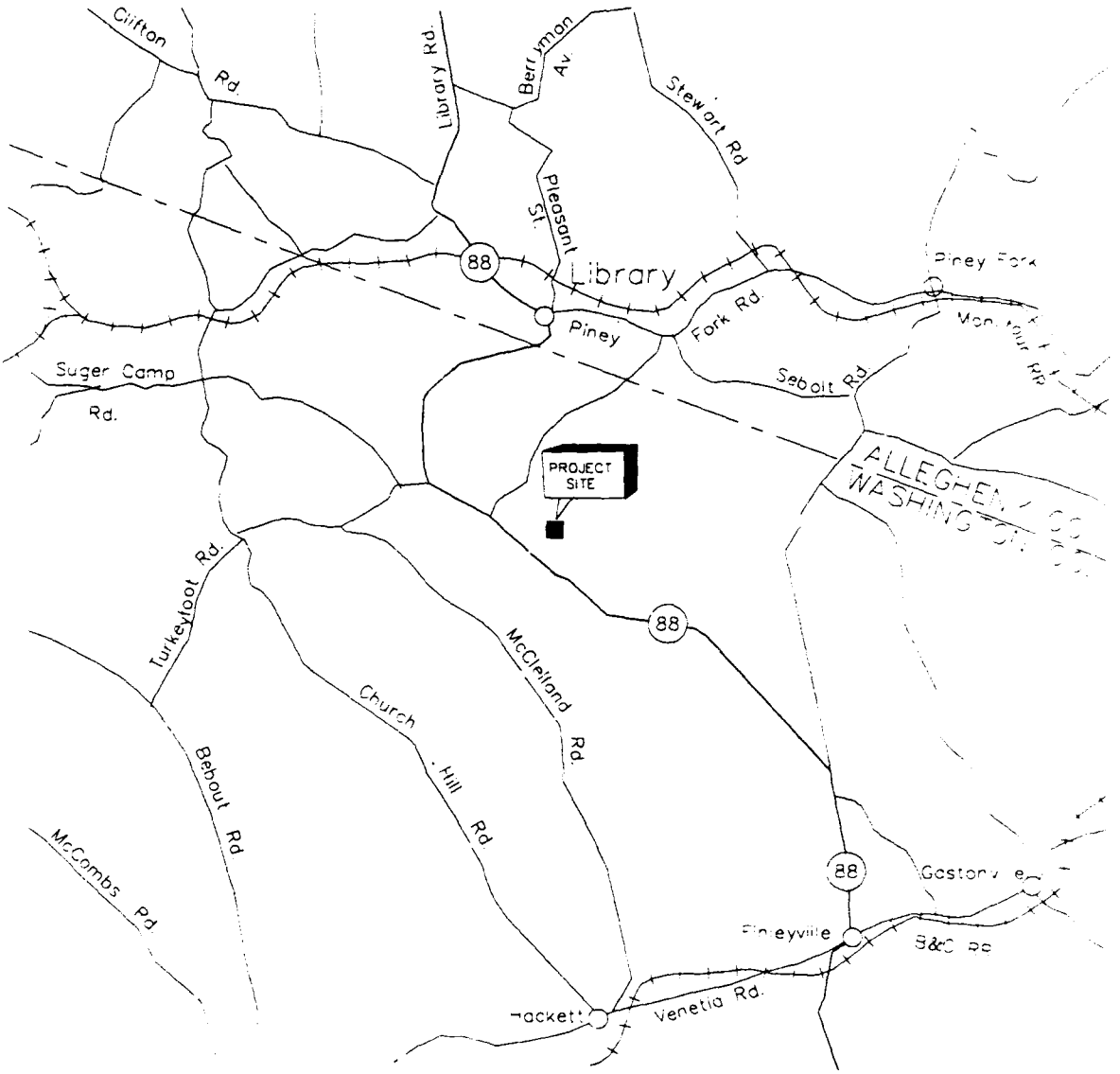

FIGURE 2 Vicinity Map of Finleyville Army Housing Units

detail of the abandonment of the sewer line. The sewer line is presumed to have been abandoned in place. There is no documentation of problems with the original sewer line, and it is presumed that the changeover to the municipal sewer system was necessary as a result of the transfer of the Nike fire control area property.

Storm Drainage System

The storm drainage for the housing units consists of outfalls to open-ground ditches and surface runoff.

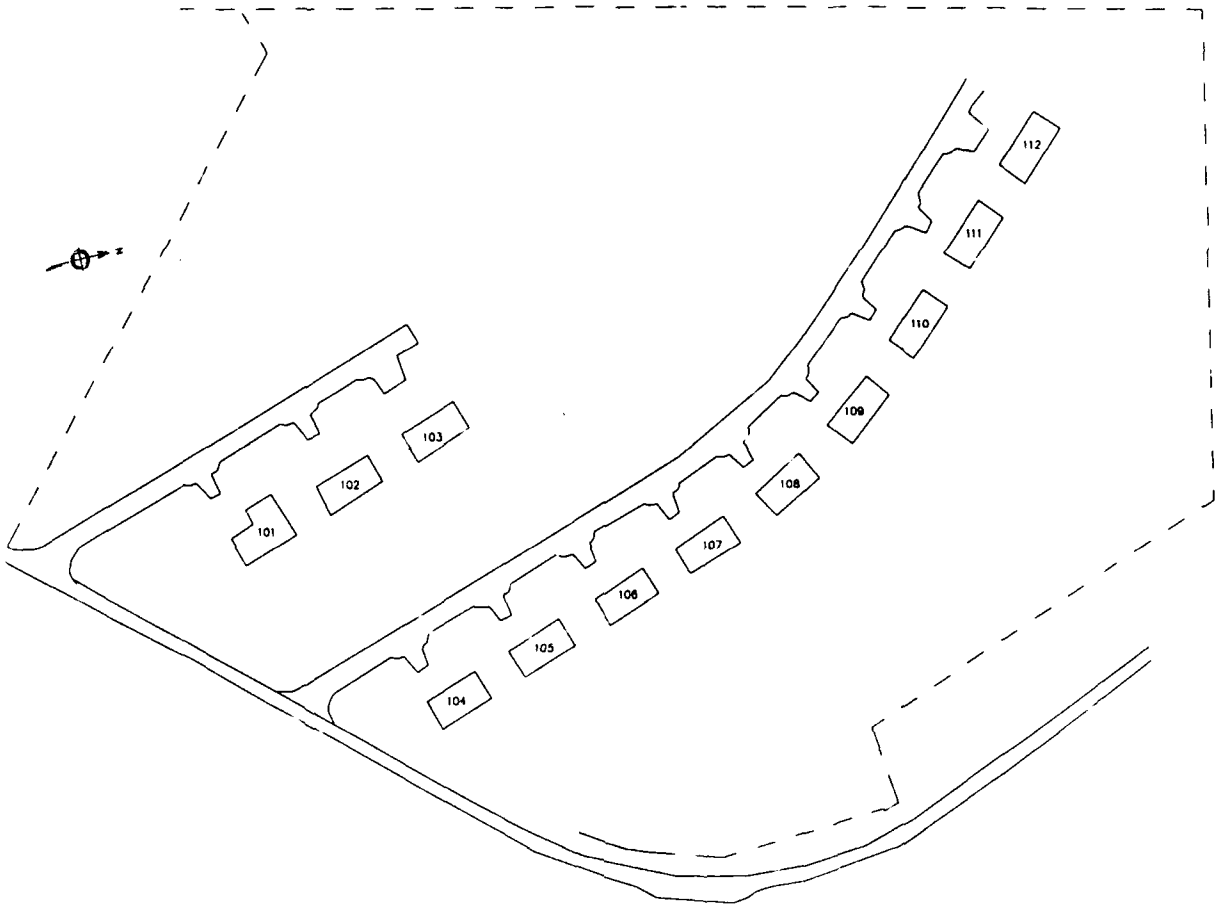

FIGURE 3 Site Plan Map of Finleyville Army Housing Units

Other Permanent Structures or Property Improvements

There are no other permanent structures or major property improvements on this property.

2.3 PROPERTY HISTORY

2.3.1 Nike Defense Program and Typical Battery-Level Practices

Generic information on the national Nike antiaircraft defense program has been compiled in two studies, one commissioned by the Army Corps of Engineers[7] and the other by the U.S. Army Toxic and Hazardous Materials Agency.[8] In both studies, independent contractors relied on information contained in unclassified documents related to the Nike surface-to-air missile program, including engineering drawings and specifications (for the facilities and the missiles themselves), interviews with Army personnel participating in the Nike program, and operations manuals and directives

relating to the operations and maintenance of Nike facilities. Taken together, these two reports represent the most complete assemblage of generic information on the Nike missile program from an environmental perspective. Salient points from both reports are condensed below.

At its zenith in the early 1960s, the Nike program included 291 batteries located throughout the continental United States. The program was completely phased out by 1976, with many of the properties sold to private concerns or excessed to state or local governments for nominal fees.

Nike Ajax missiles were first deployed in 1954 at installations throughout the continental United States, replacing, or in some cases augmenting, conventional artillery batteries and providing protection from aerial attack for strategic resources and population centers. Typically, Nike batteries were located in rural areas encircling the protected area. The Ajax was a two-stage missile using a solid-fuel booster rocket and a liquid-fuel sustainer motor to deliver a warhead to airborne targets.

The Ajax missile was gradually replaced by the Nike Hercules missile, introduced in 1958. Like the Ajax, the Hercules was a two-stage missile, but it differed from the Ajax in that its second stage was a solid-fuel rather than liquid-fuel power source and its payload often was a nuclear rather than conventional warhead. Ajax-to-Hercules conversions occurred between 1958 and 1961 and required little change in existing Nike battery facilities. A third-generation missile, the Zeus, was phased out during development and consequently was never deployed.

A typical Nike missile battery consisted of two distinct and separate operating units, the launch operations and the integrated fire control (IFC) operations. The two operating areas were separated by distances of less than two miles, with lines of sight between them for communications purposes. A third separate area was also sometimes part of the battery. This area was typically equidistant from the two battery operating sites and contained housing for married personnel assigned to the battery. Occasionally, these housing areas also contained battalion headquarters, which were responsible for a number of Nike batteries.

Depending on area characteristics and convenience, the housing areas were often reliant on the launch or IFC sites for utilities such as potable water, electrical power, and sewage treatment. In those instances, buried utility lines connected the housing area to one or both of the other battery properties. It is also possible, however, that housing areas were completely independent of the missile launcher and tracking operations. In those instances, the necessary utilities were either maintained on the housing site or purchased from the local community. In many localities, as the character of the land area around the housing units changed from rural to suburban or urban, communities extended utility services to the housing unit locations, in which case conversions from independent systems to community systems were made.

A large variety of wastes was associated with the operation and maintenance of Nike missile batteries. Normally encountered wastes included benzene, carbon tetrachloride, chromium and lead (contained in paints and protective coatings), petroleum hydrocarbons, perchloroethylene, toluene, 1,1,1-trichloroethane,

1,1,2-trichloroethane, and trichloroethylene. Because of the rural locations of these batteries, and also because very few regulatory controls existed at that time, most of these wastes were managed "on-site." (Unused rocket propellants and explosives, however, would always have been returned to central supply depots and not disposed of on-site.) It is further conceivable that wastes generated at one of the Nike properties may have been transferred to its companion property for management or disposal.

Wastes related to missile operation and maintenance would not have been purposely transferred from a battery operating area to a housing area with no facilities for waste management or disposal. In some instances, however, the sewage treatment facilities for all Nike battery properties were located at the housing area; that possibility cannot be automatically ignored. Finally, where housing areas received various utilities from either of the operating areas, it is also possible that wastes disposed of on those other properties may have migrated to the housing area via the buried utility lines. And since decommissioning of the Nike batteries did not normally involve removal of buried utility or communication lines, any such contaminant migration is likely to have gone unnoticed.

2.3.2 Finleyville Housing Units

The Finleyville housing area was constructed in 1957 to provide stand-alone housing for military personnel assigned to the Finleyville Nike battery. Twelve single-family housing units were constructed on a 20.23-acre parcel of land just outside the town of Finleyville. The site has been used as a family housing site for active duty U.S. military families in the greater Pittsburgh area since the missile sites were deactivated in the early 1970s.

All of the Finleyville housing units are built on foundations made of concrete and masonry block with asphalt flooring overlaying the concrete foundations. Original outside construction was of wood frame covered with vertical wood siding. The siding was then recovered with vinyl siding at a later date (unknown). The roofing is of the built up gravel type of construction (tar and pea gravel). Each unit was originally equipped with forced air natural gas-fired furnaces. Natural gas for indirect heating has been supplied to this property since the time of its initial construction, therefore, no fuel oil underground storage tanks ever existed on the property. Since the initial property development in 1957, the housing units have always utilized city supplied water. The housing units have been connected to the city sanitary system since 1978. No other permanent structures have been added and none of the original structures have been razed.

2.4 ENVIRONMENTAL SETTING AND SURROUNDING LAND USE

The population of the city of Finleyville is 402; that of Pennsylvania is 11,864,751; and that of Washington County is 217,074, (1980 census).

The family housing units are located approximately 1.5 miles northeast of Finleyville, Pa., and 7 miles south of Pittsburgh on terrain composed of gently rolling to

steep slopes along areas of gullies and streams. Surrounding areas are wooded and hilly with both agricultural and residential properties.

The Monongahela River Basin occupies 7,384 square miles; lies in the eastern portion of the Ohio River Basin, and includes parts of the states of Maryland, West Virginia, and Pennsylvania. Roughly 36% of the land area of the Monongahela River Basin lies within Pennsylvania. The Monongahela River Basin is located in the Appalachian Plateaus Physiographic Region. The terrain is rugged and valleys are deep and narrow. Flat areas are limited to narrow floodplains and some terraces and flat-topped hills.

The land use patterns within the basin reflect the major topographic characteristics of the area. In 1982, land use within Washington County was as follows: 10.3% urban, 47% agriculture, 35% forest, and 7.7% other (including mining).[9] Most of the agriculture, manufacturing, mining, and urban and industrial centers are located in the less rugged western half of the basin. Forested lands predominate in the eastern half. Hay and livestock are the chief agricultural products. Much coal mining has occurred in the basin, utilizing both surface and underground mining techniques. Most of the coal mining has occurred in the western third, especially along the main stem of the Monongahela River. (The Monongahela's main stem flows northward approximately two miles east of Finleyville.) Industrial activities are concentrated along the Monongahela River, especially within the Pittsburgh metropolitan area.

Oil and gas wells are scattered throughout the basin, with many located in the immediate vicinity of the Finleyville housing units. The entire area is criss-crossed with gas and petroleum pipelines that serve not only to distribute natural gas for indirect heating, but also to collect raw gas recovered from the various production wells located throughout the area.

2.5 GEOLOGIC AND HYDROLOGIC SETTINGS

The Finleyville housing area lies within the Appalachian Plateaus Physiographic Province.[9] Rock types are primarily sandstones and shales that contain thin beds of coal. The rocks are divided into 10 stratigraphic units. From youngest to oldest, these units are the Dunkard Group of Permian and Pennsylvanian age; the Monongahela, Conemaugh, and Allegheny groups, and the Kanawha Formation of Pennsylvanian age; the Greenbrier Limestone and Pocono Group of Mississippian age; and the Hampshire, Chemung, and Brallier Formations of Devonian age. Coal beds are numerous in the Pennsylvanian system. The Allegheny and Monongahela groups have 12 feet and 3 feet, respectively, of workable coal. The Conemaugh Group has only thin beds of coal that are generally not workable. The Pennsylvanian system accounts for approximately 75% of the rock units present in the Finleyville geographic area.

Soils in the Monongahela River Basin are grouped into 35 associations composed of combinations of 31 major soils. Soils in the Finleyville area are composed mainly of the Guernesey-Culleoka association and are formed in unconsolidated water-sorted alluvial materials. Soil pH values range from highly acidic to neutral. Terrain slopes range from 3 to 35%. Distances to bedrock on the surrounding hillsides are expected to average 4 to 5 feet.

Quaternary deposits consist of alluvium, which overlies bedrocks in most places along stream valleys. The alluvium is generally permeable and, when saturated, yields moderate to large supplies of water. Groundwater in bedrock occurs largely in secondary openings such as joint planes or solution openings. The Conemaugh Group crops out in the extreme northern part of the county and along some stream valleys, and is the source of moderate supplies of groundwater.

The Monongahela River and its tributaries cut valleys below the water table in the interstream areas. Under this condition, the aquifers discharge on the slopes of the valleys in the form of hillside springs and seeps. Conversely, during high stream flow conditions, surface streams will recharge aquifers.

Surface-water flow characteristics within the Monongahela Basin are largely the result of topographic features. Average annual runoff in Subbasin 19 ranges from 14 to 28 inches and is primarily influenced by precipitation distribution; however, land use, land cover, and geologic factors also exert some influence.[10] Flows in most valley streams are seasonably variable. Most streams are found in the valley floors, although, under certain hydrologic conditions, groundwater will discharge to the surface by means of hillside streams and seeps.

3 ENVIRONMENTALLY SIGNIFICANT OPERATIONS

3.1 ASBESTOS CONSTRUCTION MATERIALS

Asphalt floor tiles that may contain asbestos were all in good condition. The inspection conducted on September 12, 1989, revealed that there was no insulation whatsoever on the water pipes. No other insulating materials were found.

3.2 ORIGINAL SEWER LINE

Originally, sewage from the housing units was delivered by sewer to the nearby IFC area of the Finleyville Nike battery. This line was abandoned in 1978, when the housing units were connected to the municipal sewer system. No documentation on this changeover could be located, but no problems with the original sewer line have been identified.

4 KNOWN AND SUSPECTED RELEASES

No major releases of contaminants or impacts on the environment are known to have occurred at the Finleyville housing area. No hazardous wastes or hazardous materials are stored on site. The housing area is not believed to have ever been involved in Nike site-related activities. The housing area has always been used as a family housing site for active duty U.S. military families in the greater Pittsburgh area. No industrial activities are believed to have occurred on this property.

Until 1978, sanitary sewage from the housing units was delivered by sewer to the nearby IFC area of the Finleyville Nike battery. No problems with this sewer line have been documented. However, documentation on the details of the sewer line abandonment could not be located. No releases of contamination from the sewer line of Nike missile-related wastes have been documented.

5 PRELIMINARY ASSESSMENT CONCLUSIONS

Although these housing units were originally developed in support of a Nike missile battery, no wastes associated with the operation or maintenance of the battery were ever delivered to or managed at this housing property.

In its original configuration, a sanitary sewer connected this housing unit with the nearby IFC area. No problems with this sewer line have been documented. However, no details of the line's abandonment could be located. The possibility that Nike missile-related contamination has migrated along this sewer line needs to be further investigated.

6 RECOMMENDATIONS

The Finleyville housing area represents no imminent or substantial threat to human health or the environment. There is no evidence to suggest that hazardous or toxic constituents have ever been released from this property. No immediate remedial action, therefore, is warranted for the site.

Possible migration of Nike missile-related contaminants along the sewer line that once connected this property with the IFC area should be further investigated. Efforts should be made to locate the sewer line and verify that it was properly abandoned. Samples of backfill materials should be analyzed to confirm the absence of Nike missile-related contaminants.

This recommendation assumes that this property will most likely continue to be used for residential housing.

REFERENCES

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7. U.S. Army Corps of Engineers, Huntsville Div., *Investigation of Former Nike Missile Sites for Potential Toxic and Hazardous Waste Contamination,* Law Engineering and Testing Co., LEG-Government Services Division, LEG Job #601 (March 1986).

8. U.S. Army Toxic and Hazardous Materials Agency, *Historical Overview of the Nike Missile System,* prepared by B.N. McMaster et al., Environmental Science and Engineering, Inc., for USATHAMA Assessments Div., Aberdeen Proving Ground, Md. (Dec. 1984).

9. Herb, W.J., et al., *Hydrology of Area 5, Eastern Coal Province, Pennsylvania, Maryland and West Virginia,* U.S. Geologic Survey, Water Resources Investigations Open File Report 81-538 (DCN 4215081RM201) (Sept. 1981).

10. *State Water Plan, Subbasin 19 Monongahela River,* Office of Resources Management, Bureau of Resources Programming (DCN 42530RM154) (July 1982).

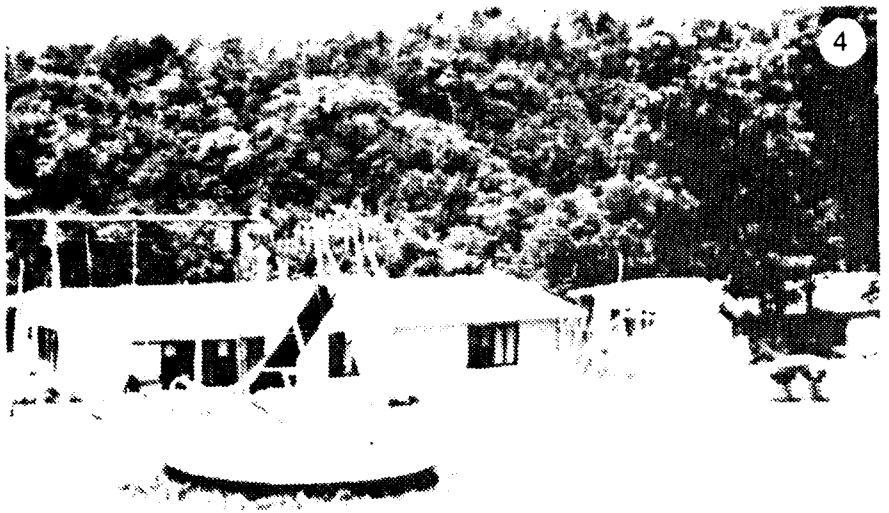
APPENDIX:

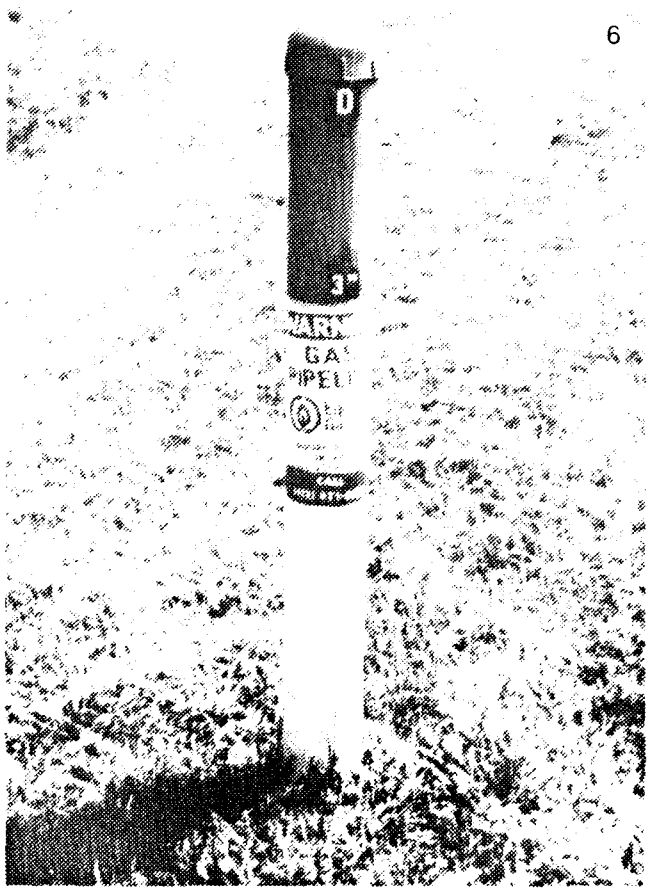
PHOTOGRAPHS OF FINLEYVILLE HOUSING FACILITY AND SURROUNDING LAND


1


2


3





5

IDENTIFICATIONS OF PHOTOGRAPHS

1. A front view (north) of the housing area.

2. One of the housing units.

3. The rear area of a housing unit; an open storm drain at the center extends towards the bottom right.

4. Playground at the housing area.

5. Electrical transformer at the top of a utility pole; transformers are the property of the Western Pennsylvania Power Company.

6. Natural gas pipeline marker; since gas is used as fuel for the housing units, the area has no oil storage tanks.